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BRITISH FINANCIAL EXPERIENCE 1790-1830

NORMAN J. SILBERLING

THE monetary and financial events which attended the military operations carried on by Great Britain and her continental allies against the armies of France, between 1793 and 1815, have acquired at this time a special interest. The wars of the Napoleonic era present, in their political and economic aspects, numerous points of similarity to, as well as interesting points of contrast with, the great war of the past five years. An examination of some of the financial experiences of England during and immediately following this earlier period may be useful, not only in setting forth historical parallels and contrasts, but in furnishing valuable lessons for our own time.

It is proposed to consider in this paper, certain aspects of the financial history of England for a period beginning just before the war and extending to the year 1830, thus including the interval of recovery and return to normal conditions. The object of this study is primarily to bring together statistical data concerning currency, prices, the rate of interest, etc., which are available without elaborate research and special calculation. It is not intended to enter at any length into a causal inquiry or reasoned interpretation of the events disclosed, but rather to present the materials in clear and usable form, enabling comparison to be made between the various sets of data and laying a basis for further investigation.

COMMODITY PRICES

Statistics of price movements form a natural starting point for an inquiry of this sort. For the well-known index numbers of W. Stanley Jevons, for the years from 1782 until 1865, we are primarily indebted to Mr. Thomas Tooke, an English merchant in the Russian trade whose career extended through and beyond the war period. Tooke, an earnest student of currency and prices, published in 1823 a work entitled *Thoughts and Details on the High and Low Prices of the Last Thirty Years*, later expanded into the first two volumes of his more widely familiar *History of Prices*. In his *Thoughts and Details* Tooke included a table, extending from 1782 to 1822, of the prices of seventy-eight raw materials and foodstuffs (including different varieties) which were furnished by a friend, Mr. A. Hinrichs. The principal source was Prince's *Price Current* established in 1782, the leading publication of its kind in that day. Only about forty of these quotations were later copied and

brought down to 1837 in the *History of Prices*,¹ with the assistance of Mr. M. L. Merac, who likewise derived practically all of his figures from the *Price Current*. The table of prices as given in this volume includes the high and low quotations at four periods within each year: (1) about the middle of January, (2) the last days of March and first days of April, (3) about the middle of July, and (4) about the middle of November. There are many gaps in the data, especially in the quotations for the first and last periods during the earlier years. This series was continued in the subsequent volumes of the *History of Prices*. In the early sixties, Professor Jevons conceived the plan of casting these materials into the form of an index number, in order that the general trend of prices might be ascertained. His results first appeared in the *Journal of the Royal Statistical Society* for June, 1865.² Jevons utilized practically all of Tooke's quotations, as given in the *History of Prices*, and supplemented these by a very few others from different sources. No attempt was made to average the four sets of quotations for each article each year, and Jevons used merely those for the *second* quarter, for which the figures were on the whole most complete. This fact is of importance in the proper use and understanding of his results. Taking the prices of 1782 as a base, Jevons constructed a series of index numbers, using the geometric mean of the individual ratios to obtain the final indices. No weights were given to the various commodities except by the inclusion in some instances of several varieties of the same article, as in the case of cotton, coffee, and sugar. Jevons also obtained index numbers for various groups of commodities such as "corn" (six cereals), metals, fibres, oriental and tropical produce. The commodities entering into his general index number, and the composition of the special groups for the limited period 1782-1830 are enumerated in Table 1. An examination of this list

TABLE 1. — COMMODITIES REPRESENTED IN
JEVONS' INDEX NUMBERS FROM
1782 TO 1830

CORN			
Wheat,	<i>Gazette</i>	average	
Barley,	"	"	
Oats,	"	"	
Rye,	"	"	
Beans,	"	"	
Peas,	"	"	from 1792.
MEAT			
Mutton,	St. Thomas' Hospital	average.	
Beef,	St. Thomas' Hospital	average.	
Irish mess beef,	St. Thomas' Hospital	average.	

¹ Vol. 2, Appendix, 1838.

² Reprinted in his *Investigations in Currency and Finance*, 1884, pp. 119 f. In the reference above to the *Journal of the Royal Statistical Society* I have used the present name of the publication. Previous to 1887 it was called the *Statistical Journal*.

FIBRES

Cotton, Upland, 1793 } Tooke until 1801; after 1801
 " Pernam, 1788 } from *Journal of the Royal Statis-*
 " Surat, 1790 } *tical Society*, December 1862.
 " Surinam, 1782-1844; Demerara after 1820.

Wool, Southdown, average 1784-1845, McCulloch's *Dic-*
tionary.

Silk, China, raw.

Flax, St. Petersburg.

TIMBER

Memel fir, in bond.

Quebec yellow pine, 1784-1806, 1820-39, 1813-21,
 McCulloch's *Dictionary*.

OILS

Gallipoli, in bond.

Fish.

FODDER

Hay, *Gentlemen's Magazine*, 1798.

Clover, *Gentlemen's Magazine*, 1803.

Straw, *Gentlemen's Magazine*, 1798.

METALS

Copper, tough cakes.

Lead, British pigs.

Tin, English bars.

Iron { Pig.
 Wrought, Russia.
 Bars, Welsh.

DYES

Logwood, Jamaica.

Indigo superior and inferior, East India.

Cochineal, Spanish.

TROPICAL FOODS, ETC.*

Sugar, Muscovados, Tooke 1782-1805, *Gazette* average after
 1800.

" Havannah, for exportation, after 1801.

Tea { congou.
 hyson

Coffee, superior British plantation.

" inferior British plantation.

" St. Domingo, for exportation, after 1807.

Rum, Jamaica.

Rice, Carolina.

Pepper, East India black.

Cinnamon, first quality, in bond.

Tobacco, Virginia, in bond.

MISCELLANEOUS

Butter, Waterford, etc.

Tallow, St. Petersburg.

Ashes, barilla, Carthage in bond.

" pearl; Danzig or Russia.

Hemp, St. Petersburg, clean.

Tar, Stockholm.

* Another group of "oriental produce" for which a separate series was calculated includes sugar, tea, pepper, cinnamon, indigo, China silk, and Surat cotton.

discloses an aggregate of fifty-two items — counting different varieties of the same article — and of about forty distinct commodities. For several articles the first quotations obtained were for years later than the

¹ The years in which the quotations begin are as follows: 1792, 1793, 1798, 1801, 1803, 1806, and 1808.

base year, 1782; and for eight commodities, later than 1790, the year from which I shall hereafter compare Jevons' series with various other series.¹ All the articles in Jevons' list are foods and raw materials, but they include a fair proportion of the important articles of this nature for the period concerned. Table 2 contains

TABLE 2. — JEVONS' INDEX NUMBERS OF PRICES FOR FORTY COMMODITIES AND FOR CEREALS, METALS, AND ORIENTAL PRODUCE, 1782-1830.*

Year (usually the second quarter)	Forty commodities	Cereals	Metals	Oriental produce
1782.....	100	100	100	100
1783.....	100	127	100	101
1784.....	93	116	90	94
1785.....	90	104	89	93
1786.....	85	105	95	82
1787.....	87	102	93	91
1788.....	87	99	96	91
1789.....	85	105	93	85
1790.....	87	117	92	80
1791.....	89	112	100	89
1792.....	93	110	108	107
1793.....	99	129	113	96
1794.....	98	140	111	84
1795.....	117	168	108	96
1796.....	125	153	117	105
1797.....	110	112	123	85
1798.....	118	116	122	107
1799.....	130	159	127	100
1800.....	141	252	135	80
1801.....	153	253	152	87
1802.....	119	140	148	80
1803.....	128	127	148	76
1804.....	122	138	151	73
1805.....	136	182	166	81
1806.....	133	163	174	81
1807.....	132	173	156	75
1808.....	149	201	160	86
1809.....	161	211	164	88
1810.....	164	203	165	96
1811.....	147	182	161	81
1812.....	148	272	145	81
1813.....	149	256	144	88
1814.....	153	165	151	121
1815.....	132	137	138	98
1816.....	109	148	115	82
1817.....	120	198	110	83
1818.....	135	209	122	93
1819.....	117	186	119	78
1820.....	106	152	109	67
1821.....	94	116	101	68
1822.....	88	92	100	67
1823.....	89	125	107	65
1824.....	88	147	108	61
1825.....	103	157	123	80
1826.....	90	152	111	56
1827.....	90	155	103	58
1828.....	81	136	95	53
1829.....	79	135	89	51
1830.....	81	138	81	52

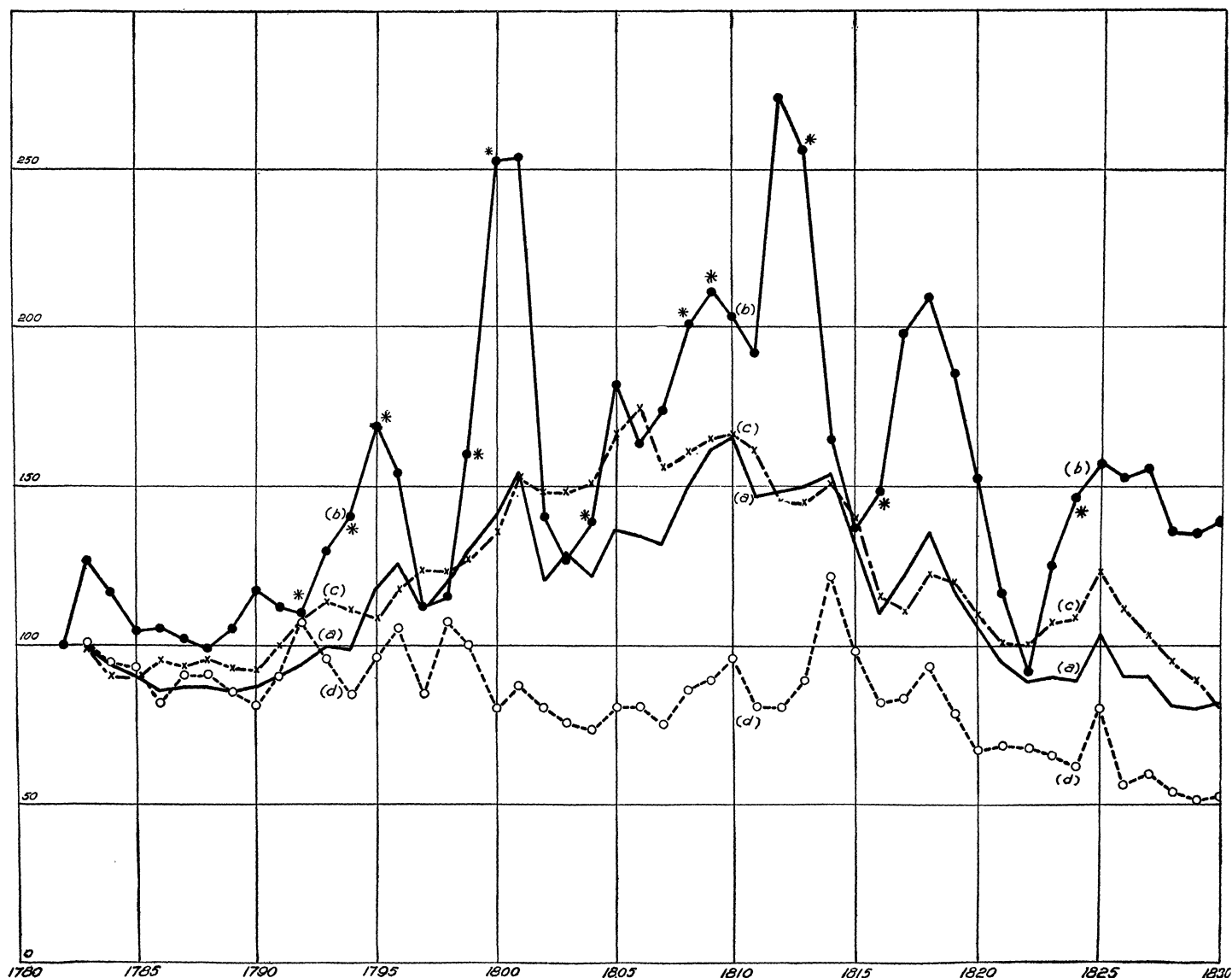
* Based on currency prices relative to those in 1782. Jevons' data for various groups of articles are given for the years 1801-20 inclusive, in terms of gold; these figures were therefore reconverted to paper by the index of the price of gold which Jevons used.

CHART 1. — JEVONS' INDEX NUMBERS OF PRICES FOR FORTY COMMODITIES, FOR CORN, FOR METALS, AND FOR ORIENTAL PRODUCE, 1782-1830

(DATA GIVEN IN TABLE 2)

(a) FORTY COMMODITIES. UNITS OF ONE PER CENT. (c) METALS. UNITS OF ONE PER CENT.
 (b) CORN (CEREALS). " " " " (d) ORIENTAL PRODUCE. " " " "

* SERIOUSLY DEFICIENT HARVESTS.



the index numbers derived for all articles, and for those of three important special groups, namely, "corn," metals, and oriental produce. These data are plotted in Chart 1.

Before interpreting the Jevons indices, it will be well to consider another series which appears hitherto to have escaped the attention of economists and statisticians. In 1848 Mr. John Taylor, a London publisher interested in monetary questions, presented before the Commons' Secret Committee on Commercial Distress a table containing the average index numbers for ninety commodities for seven-year periods, from 1784-90 (the base period) down to 1833-37 (the last being only a five-year period). These were presented both for each commodity separately, and averaged for the entire list.¹ This list embraces all of the articles used by Jevons²

¹ See *Parliamentary Papers*, 1847-48, 8, Pt. 1, p. 434. The original table bears the heading: "Table of the comparative prices of ninety of the principal articles of commerce, expressed in centesimal proportions," and is given in full in the appendix to the present paper.

² Irrespective of minor diversities in variety or grade.

with the exception of beans, peas, mutton, Georgia cotton, fodder, and wrought iron; and in addition it contains those listed in Table 3.

TABLE 3. — COMMODITIES REPRESENTED IN TAYLOR'S INDEX NUMBERS, BUT NOT USED BY JEVONS

Alum, British.	Raisins, Malaga.
Ashes, pot.	" Smyrna, red.
Bark, oak, British.	Rum, Leeward Islands.
Brandy, cognac.	Seeds, Caraway, foreign.
Candles.	" Clover, red, foreign.
Coal, Newcastle.	" Clover, white, foreign.
" Sunderland.	" Rape, British.
Coffee, Mocha.	" Linseed, foreign.
Copper, sheets.	Silk, raw, Bengal and Brutia.
Cotton, Barbice and Smyrna.	Silk, thrown, Piedmont.
Cotton yarn, Turkish.	Spirits, British malt.
" " British.	Sugar, Refined, powder-loaves.
Currants.	" Refined, lumps.
Figs.	Sugar, Raw (brown), Jamaica.
Flour, British.	" Raw (fine), Jamaica.

Hemp, Riga, Rhine.	Tallow, London, melted.
Hops, pockets.	Tar, Archangel.
Leather, butts, superior.	Tea, Bohea.
Malt.	Timber, Riga fir.
Nutmegs.	Tobacco, Maryland, fine yellow.
Oils, Rape seed, British.	Wax, Bees', British.
" Linseed, British.	" Bees', Foreign.
" Vitriol.	Wines, Port.
Opium, Turkish.	" Sherry.
Pimento.	Wood, Mahogany, Jamaica.
Pork, mess.	Wool, Spanish Leonesa, best.
Quicksilver.	" Long Kent.

Taylor stated that the figures were taken from a work entitled *Tables of Taxation, Currency, and Prices* (1837), of which the author, though unnamed, was quite possibly himself. The prices used were exclusive of duty. The sources and exact method of deriving the individual (average) price ratios are not stated. The final index numbers are a simple arithmetic average of the several items for each period. In Table 4 the re-

TABLE 4. — TAYLOR'S AND JEVONS' * INDEX NUMBERS OF PRICES BY PERIODS

(AVERAGE FOR 1784-90 = 100)

PERIOD	Taylor's index	Jevons' index
1784-90.....	100	100
1791-97.....	120	118
1798-1804.....	150	143
1805-11.....	174	166
1812-18.....	177	153
1819-25.....	125	110
1826-32.....	104	94
1833-37.....	104	92

* Computed by averaging annual figures of each period and reducing to base period 1784-90 as 100.

sults for all commodities for the eight periods are given, and in Chart 2 they are plotted and placed in comparison with Jevons' figures, averaged similarly, and reduced to the same base (an operation sufficiently accurate for the present purpose).

The two price series are in substantial agreement except that (1) the Taylor figures run consistently higher; and (2) the Jevons index reaches a maximum in the period from 1805-11, dropping from 166 to 153 in the following period, while the Taylor index rises from 174 in the period from 1805-11 to a maximum of 177 in the period 1812-18. These differences between the two series are due almost altogether to differences in the two basic commodity lists.¹ If only those items of the Taylor lists are taken for which there are corresponding items in the Jevons lists, the indices resulting from the paired items are thoroughly consistent. Furthermore

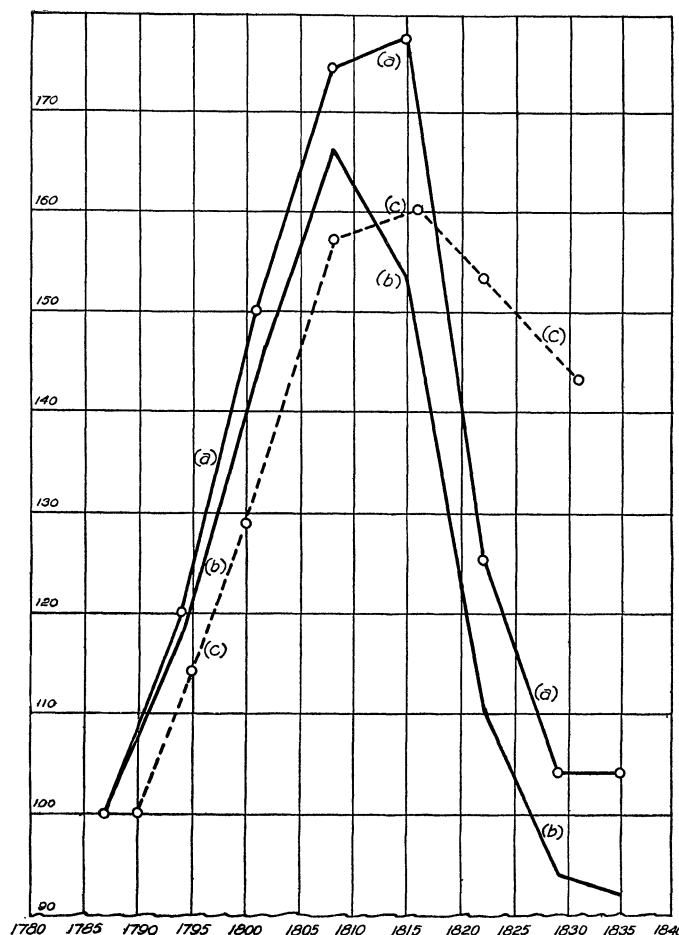
¹ Jevons' use of the geometric mean would tend to make his index only slightly lower.

² Mr. Silberling left for London in July. As we go to press we have received a letter from him stating that he has secured additional data concerning prices. He has found a new index based on the prices of 90 articles covering the period 1790-1830. Separate indices for domestic produce (34 articles) and imported produce (56 articles) are

CHART 2. — INDEX NUMBERS OF PRICES AND WAGES, 1784-1837, BY PERIODS CENTERED

(DATA GIVEN IN TABLES 4 AND 5)

- (a) TAYLOR'S INDEX NUMBERS OF PRICES.
(b) JEVONS' INDEX NUMBERS OF PRICES.
(c) WOODS' INDEX NUMBERS OF WAGES.



if the Jevons list is made to include the additional items in Taylor's, the effect is to raise the Jevons index noticeably and to delay the final drop in the index until after 1814. It may fairly be argued that the longer list employed by Taylor gives a more reliable index of the general price level. Jevons' mean is too much affected by the relatively large number of oriental products whose prices show exceptional decline. Certainly Jevons' index cannot be accepted unreservedly in the light of the Taylor series.²

The course of commodity prices during the Napoleonic period and until 1830 is reasonably clear. From 1793 to 1814 was a period of increasing prices, in spite of the apparent drop from 1810-14 in Jevons' index. By 1801 prices had risen about 50 per cent above the pre-war level.³ The upward movement appears then to have halted for two or three years. Early in 1802 the first phase of the war with France was closed by the Peace of Amiens. Hostilities were resumed, however, in 1803, and continued with varying scope and intensity

computed. The high point of prices, as shown by these data, was reached in 1813-14 and not in 1810 as the Jevons series indicates. These data strengthen the conclusion that the Taylor series rather than the Jevons series correctly describes the general price movement. — Editor.

³ Of course, these war prices were paper money prices, for the Bank of England had suspended specie payments February 26, 1797.

until 1815. The price level, temporarily declining from 1801 to 1804, rose rapidly again from 1805 to 1810. From 1810 to 1814 there was probably no material change, the general level remaining about 70 per cent above the average of the decade before the war.¹

The return to the old level was rapid, occupying only seven or eight years, and beginning shortly before the declaration of peace. The fall of prices in 1815 and 1816 was pronounced. The following two years witnessed a tendency toward somewhat higher prices. Resumption of specie payments was begun by the Bank of England in 1819, and fully accomplished in 1821. By the latter year prices were generally at about the pre-war level. The higher prices of 1825-26 are rather the outward phases of deficient harvests and speculative enterprise than of the price cycle of the war. In accounting for the quick drop of prices in England after 1814 it should be remembered that conditions were unlike the present in at least three important particulars:

- 1. A return to pre-war prices was a question of bringing an inconvertible paper circulation to a sound specie basis. Questions of convertibility do not complicate the present situation. The existing monetary inflation persists in the face of unrestricted gold payments.
- 2. In the years following the Napoleonic wars the general tendency of agricultural prices was downward. No such tendency is to be expected at this time.
- 3. The production of the precious metals was low during the first decades of the nineteenth century.² No sustained diminution of gold output is observable at present.

MONEY WAGES

Statistics of wages for this period are difficult to obtain; but for the sake of completeness I offer for comparison with the average price data of Taylor and Jevons the interesting index numbers of wages calculated by Mr. G. H. Woods, published in the *Economic Journal* for December 1899.³ These numbers represent money wages in twenty-four industrial centers in the United Kingdom (no agricultural wages being included) at four- or five-year intervals. For some of the earlier years not all the centers are represented. The base year is 1840. The years fall sufficiently well within the

¹ The following seventeen articles included in Taylor's figures, but not in Jevons', rose higher in the period 1812-18 than in 1805-11: alum, cognac, Sunderland coal, currants, figs, flour, malt, Malaga raisins, caraway seeds, rape seeds, linseed, quicksilver, Jamaica rum, refined sugar, port wine, sherry wine, Bohea tea.

² Soetbeer's statistics of the *average annual gold production* of the world for the period are as follows:

1761-1780	20,705 kilograms
1781-1800	17,790 "
1801-1810	17,778 "
1811-1820	11,445 "
1821-1830	14,216 "

(*Litteraturnachweis über Geld und Münzwesen.*)

³ "The Course of Average Wages between 1790 and 1860," *Economic Journal* (London), 9, p. 588.

periods chosen by Taylor to enable a comparison to be made, particularly if the averages are taken of 1805 and 1810, and of 1820 and 1824. I have also reduced these figures to 1790 as a base year. Table 5 contains the original figures and my revision of them.

TABLE 5. — WOODS' INDEX NUMBERS OF WAGES

YEAR	Original data	Average for period	Average referred to base 1790
1790.....	72	72	100
1795.....	82	82	114
1800.....	93	93	129
1805.....	104	113	157
1810.....	122		
1816.....	115	115	160
1820.....	109	110	153
1824.....	112		
1831.....	103	103	143

These results are plotted for comparison with the two price curves on Chart 2. Wages show a striking similarity to Taylor's price curve through their fifth period, when they both reached maximum values, 160 and 177 per cent respectively. It is quite probable that if the indices had been computed and averaged for shorter periods, e. g., annually, wages would have lagged in topping their crest and starting down, as they lagged in rising, but by not as long as the seven years between periods measured from center to center. Another noteworthy feature is the sluggish downward slope of the wage curve in the last two periods, the era of reconstruction. In studying this wage curve, it should be remembered that both price bases are the 1784-90 average, while the wage base is the level in 1790, when a rise had probably already begun. This has the effect of giving line (C) a later "take-off" from 100 than it would in fact have shown if data had made closer comparability of base practicable. To compensate for that fact, we should have to move the points on the dotted line upward by a percentage equal to the percentage excess of the 1790 wage level over the unknown average 1784-90 wage level. Thus the greater sensitiveness of wages in their rise than in their fall, already seemingly pointed out by the curves as they stand, would be still more strikingly demonstrated.

PRICE OF GOLD AND SILVER AND COURSE OF THE EXCHANGES

In addition to the prices of commodities, it is desirable to study the prices of gold and silver and the course of the exchanges during the existence of the Bank restriction. Weekly quotations for standard gold bars, foreign gold coin, standard silver bullion, and Spanish silver dollars, as well as the course of exchange on Hamburg, Paris, and Lisbon, are given in the Appendices of the *Commons' and Lords' Reports on Resumption of Payments*, 1819, and continued in the *Commons' Report on the Bank Charter*, 1832. The price of gold was published in the money-market only when sales occurred

in sufficient magnitude to be of significance, and so many of the quotations are lacking that it was found desirable to use the price of silver instead of gold for securing annual averages. Monthly averages for both silver dollars and gold coin were, however, first obtained and plotted. These indicated, where comparison was possible, a nearly perfect correspondence, and hence justified the use of silver alone for the purpose in hand. The weekly data for Spanish dollars were accordingly averaged for each year. The theoretical gold price of dollars was then calculated according to Soetbeer's figures of the ratio between gold and silver at Hamburg.¹ Then, for each year, the percentage deviations of the average price in paper from this approximate calculated true par were obtained, from 1790 until 1824 inclusive. The results are given in Table 6.

TABLE 6.—ANNUAL AVERAGE PRICES (IN PAPER AND IN GOLD) OF SPANISH DOLLARS PER OUNCE, AND DEVIATIONS FROM PAR, 1790-1824

YEAR	Actual price (paper) (pence)	Theoretical price (gold) (pence)	Deviation (pence)	Percentage deviation (Units of 1%)
1790.....	61.0	60.7	+ 0.3	+ 0.5
1791.....	61.7	60.7	+ 1.0	+ 1.6
1792.....	63.9	60.2	+ 3.7	+ 6.2
1793.....	60.6	60.9	- 0.3	- 0.5
1794.....	60.0	59.4	+ 0.6	+ 1.0
1795.....	62.4	58.7	+ 3.7	+ 6.3
1796.....	63.4	58.4	+ 5.0	+ 8.6
1797.....	61.6	59.3	+ 2.3	+ 3.9
1798.....	60.0	58.6	+ 1.4	+ 2.4
1799.....	63.3	58.0	+ 5.3	+ 9.1
1800.....	67.2	58.2	+ 9.0	+15.5
1801.....	69.7	59.1	+10.6	+18.0
1802.....	65.8	59.8	+ 6.0	+10.0
1803.....	64.4	59.2	+ 5.2	+ 8.8
1804.....	63.8	59.2	+ 4.6	+ 7.8
1805.....	63.7	57.8	+ 5.9	+10.2
1806.....	65.4	58.8	+ 6.6	+11.2
1807.....	65.2	59.2	+ 6.0	+10.1
1808.....	63.5	56.8	+ 6.7	+11.8
1809.....	65.6	57.3	+ 8.3	+14.5
1810.....	67.4	58.0	+ 9.4	+16.2
1811.....	71.6	58.8	+12.8	+21.8
1812.....	75.1	56.7	+18.4	+32.4
1813.....	81.2	56.2	+25.0	+40.9
1814.....	75.3	60.7	+14.6	+24.1
1815.....	69.2	59.8	+ 9.4	+15.7
1816.....	59.9	59.8	+ 0.1	+ 0.2
1817.....	61.3	60.4	+ 0.9	+ 1.5
1818.....	65.1	59.5	+ 5.6	+ 9.4
1819.....	61.7	59.6	+ 2.1	+ 3.5
1820.....	58.9	58.5	+ 0.4	+ 0.7
1821.....	57.9	57.3	+ 0.6	+ 1.0
1822.....	57.3	57.9	- 0.6	- 1.0
1823.....	57.0	57.7	- 0.7	- 1.2
1824.....	57.8	57.7	+ 0.1	+ 0.2

¹ Soetbeer's figures may be found in Laughlin, *History of Bimetallism*, pp. 19 and 24. The Spanish dollar is taken as 43/48 fine (Dubost, *Elements of Commerce*, 2, p. 54) causing one ounce to contain 430 grains of fine silver. Since 430 grains of fine gold were equal (at £3, 17s., 10½d., per standard ounce) to 913.277d. [Laughlin, Appendix] the price of silver dollars, in gold, would be found by dividing the

TABLE 7.—ANNUAL AVERAGE QUOTATIONS OF LONDON EXCHANGE ON HAMBURG, AND DEVIATIONS FROM THE PAR OF EXCHANGE, 1790-1824

YEAR	Actual quotations †	Ratio of gold to silver*	True par †	Deviations †	Percentage deviation
1790.....	35.42	15.04	34.86	+ 0.6	+ 1.7
1791.....	35.58	15.05	34.88	+ 0.7	+ 2.0
1792.....	34.50	15.17	35.16	- 0.7	- 2.0
1793.....	36.33	15.00	34.77	+ 1.6	+ 4.6
1794.....	35.65	15.37	35.63	+ 0.02	+ 0.1
1795.....	33.67	15.55	36.04	- 2.4	- 6.7
1796.....	33.92	15.65	36.28	- 2.4	- 6.6
1797.....	36.75	15.41	35.72	+ 1.03	+ 2.9
1798.....	37.58	15.59	36.14	+ 1.4	+ 3.9
1799.....	34.92	15.74	36.48	- 1.6	- 4.4
1800.....	31.67	15.68	36.34	- 4.7	-12.9
1801.....	31.67	15.46	35.83	- 4.2	-11.7
1802.....	33.00	15.26	35.37	- 2.4	- 6.8
1803.....	34.25	15.41	35.72	- 1.5	- 4.2
1804.....	35.50	15.41	35.72	- 0.2	- 0.6
1805.....	34.83	15.79	36.60	- 1.8	- 4.9
1806.....	34.17	15.52	35.97	- 1.8	- 5.0
1807.....	34.58	15.43	35.76	- 1.2	- 3.4
1808.....	34.08	16.08	37.27	- 3.2	- 8.6
1809.....	29.75	15.96	37.00	- 7.2	-19.5
1810.....	29.92	15.77	36.56	- 6.6	-18.0
1811.....	24.92	15.53	36.00	-11.1	-30.9
1812.....	28.17	16.11	37.34	- 9.2	-24.6
1813.....	27.75	16.25	37.67	- 9.9	-26.2
1814.....	30.42	15.04	34.86	- 4.4	-12.6
1815.....	31.67	15.26	35.37	- 3.7	-10.5
1816.....	36.00	15.28	35.42	+ 0.6	+ 1.7
1817.....	35.42	15.11	35.02	+ 0.4	+ 1.1
1818.....	34.25	15.35	35.58	- 1.3	- 3.7
1819.....	35.25	15.33	35.53	- 0.3	- 0.8
1820.....	37.00	15.62	36.21	+ 0.8	+ 2.2
1821.....	38.25	15.95	36.97	+ 1.3	+ 3.5
1822.....	37.58	15.80	36.62	+ 1.0	+ 2.7
1823.....	38.00	15.84	36.72	+ 1.3	+ 3.5
1824.....	37.25	15.82	36.67	+ 0.6	+ 1.6

* Corrected by the Hamburg ratio. Cf. footnote above.

† Expressed in *schillings*, Flemish *banco* (silver), per pound sterling.

The most satisfactory and also the most significant exchange quotations are those for Hamburg, at that time the great entrepôt for continental trade.² The data for the Paris Exchange are incomplete and somewhat difficult of interpretation, while the usefulness of the Lisbon rates is lessened by the existence in Portugal of a depreciated paper currency. The weekly Hamburg quotations are averaged and expressed in the number of Hamburg *schillings*, Flemish *banco* money, given for a pound sterling. The usance of the bills was two and one-half months. Since the Hamburg *banco* money was payable in silver, it is necessary, in calculating the true par, to employ once more the ratio of gold to silver.

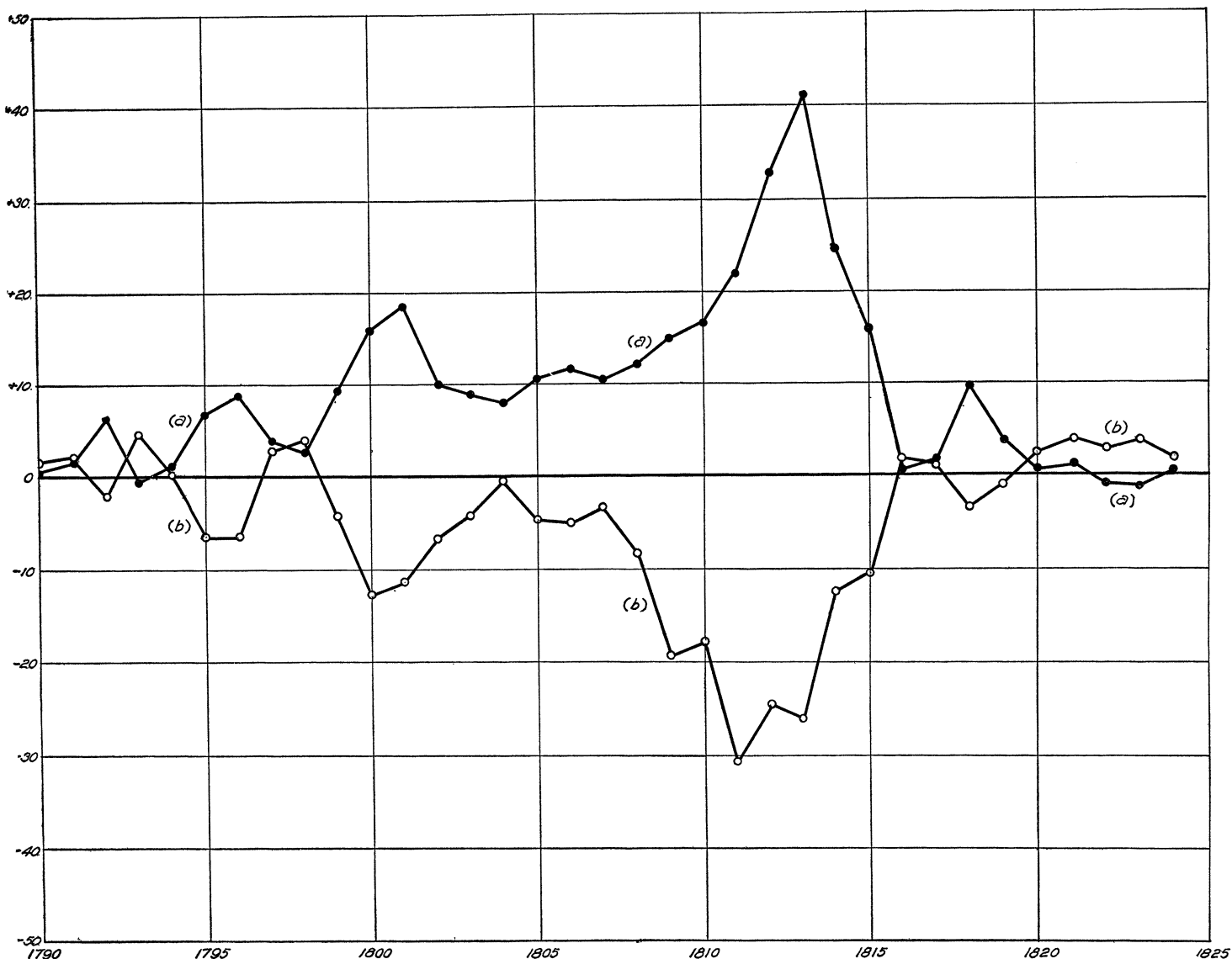
ratio of gold to silver into 913.277, on the assumption that the Hamburg ratio would, ordinarily, indicate the ratio in London.

² Mr. Silberling left for London in July. As we go to press we have received a letter from him stating that he has secured additional series of still more significant exchange rates bearing upon the depreciation of British currency.

CHART 3. — PERCENTAGE DEVIATIONS FROM PAR OF SPANISH SILVER DOLLARS AND HAMBURG EXCHANGE, 1790-1824

(DATA GIVEN IN TABLES 6 AND 7)

(a) SPANISH SILVER DOLLARS. PERCENTAGE DEVIATIONS FROM PAR. UNITS OF ONE PER CENT.
 (b) HAMBURG EXCHANGE. " " " " " " " "



This par having been calculated,¹ the percentage deviations from it were taken for each year. The data, as they appear in Table 7, are believed to be as accurate and complete as it is possible to make them; but for a perfect measure of the depreciation of the currency from its standard by means of the exchange it would be necessary to have further data relative to the balance of payments, to the specie points, and to the discount rates at London and Hamburg. All that can be stated regarding the specie points is that the cost of transporting specie to the continent rose from about 3 per cent in 1797 to about $5\frac{1}{2}$ -7 per cent in 1810, but fluctuated consider-

¹ According to an appendix in the *Lords' Report* of 1819 (furnished by Dr. Kelly, the cambist) $2\frac{2}{3}$ Hamburg *schillings* Flemish *banco* equaled one Flemish *marc banco*, of which it took $27\frac{3}{4}$ to purchase one *marc* (Cologne weight) of fine silver equal to 3608 grains fine. A *schilling* Flemish *banco* would, then, be worth $48.7567 +$ grains of fine silver. A pound sterling is $113.0016 +$ grains of fine gold. If the market ratio be multiplied, therefore, by $\frac{113.0016}{48.7567} = 2.3177$, the result will be the number of *schillings* given in Hamburg for the bullion equivalent of a pound sterling.

² *Bullion Report, Parliamentary Papers*, 1810, 3, p. 11.

ably from week to week.² In 1811, the embargoes against British trade and the confiscation of British manufactures in Europe reached a high degree of effectiveness, and the consequent probable rise of freight and insurance may have produced the peculiar results indicated for that year on Chart 3, where the deviations of the price of silver and the course of exchange from their respective calculated pars are presented. The general inverse movement is virtually perfect except during 1810-12, but deviations of silver are in general greater than for exchange rates. The maximum price of silver was reached in 1813, two years after the maximum price level according to Jevons. Comparing the silver curve of Chart 3 with the two price curves of Chart 2, it is instructive to observe that: (1) the range of deviations from 100 per cent is much narrower for silver than for either Taylor's or Jevons' general commodities; (2) the silver curve increased later and dropped earlier than any of the curves on Chart 2, in other words showing a naturally much greater stability about its par than commodities at large. A detailed

study of the changes in both silver and gold exchange would disclose at many points a close connection between their fluctuations and the state of military and naval operations.¹

INTEREST AND DISCOUNT RATES

We now turn to a consideration of interest and discount rates. It has long been customary to measure the changes in the rate of interest in England by the calculated yield upon 3 per cent Consolidated Annuities. In order to obtain more reliable figures than are afforded by the usual average of the *yearly* high and low quotations for consols, an annual average has been taken of the mean of the *monthly* high and low prices given by the *Gentlemen's Magazine*.² The average yield is derived in the usual manner by dividing 3 per cent by the average price, and the results are given in Table 8.

TABLE 8.—ANNUAL AVERAGE PRICE AND YIELD OF BRITISH 3 PER CENT CONSOLS, 1790-1830

YEAR	Average price (Units of £1)	Yield (Units of 1%)	YEAR	Average price (Units of £1)	Yield (Units of 1%)
1790.....	76.89	3.9	1811.....	64.19	4.7
1791.....	83.75	3.6	1812.....	59.72	5.0
1792.....	90.04	3.3	1813.....	58.81	5.1
1793.....	75.70	3.9	1814.....	66.79	4.5
1794.....	68.20	4.4	1815.....	59.90	5.0
1795.....	66.37	4.5	1816.....	62.13	4.8
1796.....	62.47	4.8	1817.....	75.30	4.0
1797.....	50.84	5.9	1818.....	78.17	3.8
1798.....	50.53	5.9	1819.....	70.93	4.2
1799.....	59.17	5.1	1820.....	68.54	4.4
1800.....	63.64	4.7	1821.....	74.48	4.0
1801.....	60.93	4.9	1822.....	79.34	3.8
1802.....	70.89	4.2	1823.....	79.51	3.8
1803.....	60.16	5.0	1824.....	93.78	3.2
1804.....	56.59	5.3	1825.....	89.69	3.3
1805.....	59.30	5.1	1826.....	79.62	3.8
1806.....	61.47	4.9	1827.....	84.14	3.6
1807.....	62.74	4.8	1828.....	85.72	3.5
1808.....	66.35	4.5	1829.....	88.83	3.4
1809.....	68.32	4.4	1830.....	89.68	3.4
1810.....	68.41	4.4			

I shall defer comment upon the data until I have explained several other series of interest rates assembled on Chart 4.

To ascertain the rate of interest at this time upon funds invested in private undertakings involves unusual difficulties. The published quotations of security prices

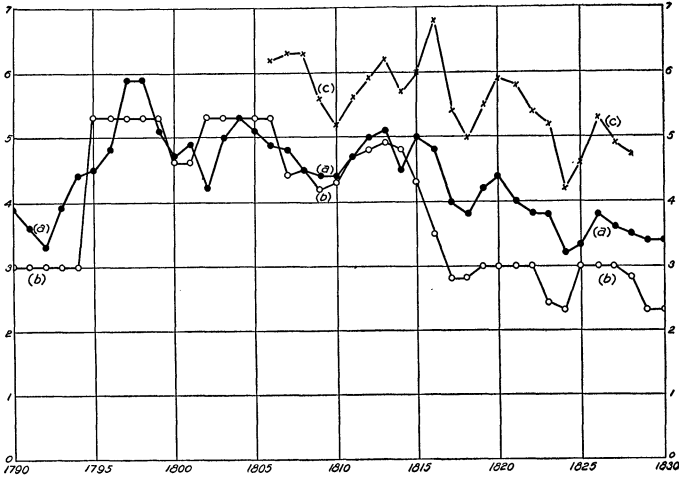
¹ A study of the exchanges from week to week in connection with political affairs would be desirable, though not possible within the scope of the present article, in which annual data alone have been used.

² Of the trustworthiness of this source William Newmarch testifies as follows, in an article dealing with Pitt's war finance: "Those returns (of prices in the magazine) were furnished by the brokers whose names they bear, and give the highest and lowest price of each kind of stock on each week-day of each month; and of their accuracy, and sufficiency for the present purpose, there can be no question." *Statistical Journal*, (1855) 18, p. 262.

CHART 4.—INTEREST RATES, 1790-1830

(DATA GIVEN IN TABLES 8, 9, 10)

- (a) AVERAGE YIELD ON BRITISH THREE PER CENT CONSOLS, 1790-1830.
- (b) AVERAGE INTEREST PAID BY GOVERNMENT ON EXCHEQUER BILLS, 1790-1830.
- (c) AVERAGE YIELD ON WEST INDIA DOCK COMPANY STOCK, 1806-28.



are meagre and must be pieced together from diverse sources (mainly monthly periodicals). In the second place, funds were much more frequently invested in consols and the stocks and shares of docks, insurance companies, and other undertakings, than loaned at a fixed rate of interest upon bonds. I have been able to discover one enterprise, however, which meets our requirements to a fair degree for the years 1806-28. In the year 1806 there were completed in London the West India Docks, running through from Blackwall to Limehouse on the Thames. The dock company was formed in 1799; it opened an import dock with warehouses in 1802, and an export dock, which completed the undertaking, in 1806. The capital of the company, originally £500,000, was increased to £1,200,000 at the completion of the construction, and was entirely paid up at that time. By the terms of the charter the docks were to enjoy a monopoly of all the shipping with the West Indies until 1824, and until then the dividends upon the capital stock were not to exceed 10 per cent per annum from the time that the entire plant was put into operation. The enterprise was ably planned and managed, and proved extremely successful. But what is important for the present investigation, the gross dividends declared remained constant at 10 per cent from 1807 until July 1829, when, according to the *Gentlemen's Magazine*, they dropped to 8 per cent. During this time, therefore, the price of this stock can furnish information as to the rate of interest, which is probably as accurate and reliable as that which would be given by a first-class seasoned "public utility" bond at the present time. The quotations of the company's stock are to be found in several contemporary periodicals: prior to September 1813, they are taken from the *London Monthly Magazine*; thereafter from the *Gentlemen's Magazine*, with occasional use of the *New Monthly Magazine* and the *European Magazine* for purposes of

comparison and checking. The quotations were furnished to these magazines by various stock brokers, and give the ruling market price (sometimes the high and low, which are never far apart) for about the first three weeks of each month. Dividends were paid in January and July, and the stock was frequently, but not uniformly, quoted *ex dividend* during these and some succeeding months; but in converting the monthly prices into annual averages no correction for this fact was thought possible or necessary. It is important to add that during the war the company usually paid dividends with the property tax deducted; the net dividends actually paid are to be found in the appendix to a *Parliamentary Report* of 1823 in which the company's history and affairs are examined in great detail, and these have been used in the calculation of the actual yields.¹ These have been obtained by dividing the dividend by the average yearly price of the stock. The results appear in Table 9.

TABLE 9.—YIELD OF STOCK OF THE WEST INDIA DOCK COMPANY, 1806–28
NET DIVIDEND (EXCLUSIVE OF TAX) AND
ANNUAL AVERAGE PRICE OF THE STOCK *

YEAR	Actual dividends (Units of £1000)	Actual rate of dividend (Units of 1%)	Average price of stock † (Units of £1)	Net yield (Units of 1%)
1806.....	108.6	9.05	144.7	6.2
1807.....	111.2	9.27	146.8	6.3
1808.....	115.4	9.61	153.5	6.3
1809.....	120.0	10.00	177.6	5.6
1810.....	108.0	9.00	172.0	5.2
1811.....	108.0	9.00	161.1	5.6
1812.....	108.0	9.00	150.8	5.9
1813.....	108.0	9.00	146.2	6.2
1814.....	108.0	9.00	156.9	5.7
1815.....	108.0	9.00	149.2	6.0
1816.....	120.0	10.00	145.8	6.8
1817.....	120.0	10.00	184.6	5.4
1818.....	120.0	10.00	199.5	5.0
1819.....	120.0	10.00	181.8	5.5
1820.....	120.0	10.00	170.7	5.9
1821.....	120.0	10.00	172.1	5.8
1822.....	120.0	10.00	184.4	5.4
1823.....	120.0	10.00	191.5	5.2
1824.....	120.0	10.00	236.4	4.2
1825.....	120.0	10.00	218.7	4.6
1826.....	120.0	10.00	187.6	5.3
1827.....	120.0	10.00	202.2	4.9
1828.....	120.0	10.00	213.8	4.7

* The capital was £1,200,000.

† Par = £100.

As a still further expedient for measuring interest rates, and particularly those upon securities of intermediate maturity, resort may be had to the interest paid by the government on Exchequer bills. These were securities issued annually for current expenses and usually against the revenues of the succeeding years, and at the option of the holder might be redeemed at the end of one year at par, or converted into the subsequent issue. The rate of interest allowed on them was varied

from time to time to correspond as nearly as possible to the rate prevailing in the market, but might not exceed $5\frac{1}{2}$ per cent nor fall below 2 per cent. A considerable proportion of the unfunded debt consisted of such Exchequer bills. In the *Parliamentary Accounts and Papers* for 1857–58, vol. 33, is given a statement of the capital value and interest charge on Exchequer bills for each year (ending January 5), from 1696 to 1857.² Dividing the latter by the former we obtain approximate figures of the rate of interest actually paid to the holders from 1790 to 1830. These rates being fixed at stated intervals (once a year) naturally do not respond to influences bearing upon the money market during those periods, but nevertheless they will be found a valuable supplement to our other data (see Table 10).

During the Napoleonic war and continuing down to the year 1834, the rates of interest and discount in England were subject to the limitations imposed throughout the period of this study by the Usury Laws, which proclaimed a maximum rate of 5 per cent. The existence of these laws did not, of course, prevent higher rates of interest than 5 per cent from being obtained through security transactions;³ nor did it prevent the government from occasionally paying a higher rate. The Laws did have the effect, however, of discouraging the published statement of the rates of discount (plus commissions) charged by all banks save the Bank of England.⁴ The Bank maintained a constant rate of 5 per cent for the discount of private paper (usually sixty-five day bills) until June 20, 1822, when the rate on the best securities was lowered to 4 per cent. On December 13, 1825, the rate again became 5 per cent and remained so until July 5, 1827, when the 4 per cent rate was resumed and continued through 1830.⁵

Let us now examine these statistics of interest rates as they appear together on Chart 4. The course of the three curves indicates unmistakably the limits of the period of war strain. By 1819–22 the rate on bills is precisely what it was during 1789–94. In 1821–22 the yield on consols is clearly back at the pre-war level. Thus the effects of the war on the market seem to have been overcome by the opening of the decade of the twenties.

¹ *Report from the Select Committee (Commons') Appointed to Consider the Means of Improving and Maintaining the Foreign Trade of the Country.* West India Docks. — With minutes of evidence and appendix; 1823. (*Parliamentary Papers*, 1823, vol. 1.) Brief accounts of the docks will be found in *Palgrave's Dictionary*, *Rees's Cyclopaedia*, vol. xii, (1809), art. Docks; and in earlier editions of the *Encyclopaedia Britannica*.

² Following the table is an historical and descriptive account of Exchequer bills (pp. 94–105). See also *Penny Cyclopaedia*, vol. 10 (1837), *sub nom.*: Charles Fenn, *Compendium of the English and Foreign Funds*, and Wm. Fairman, *Public Funds of England*.

³ See the evidence given by David Ricardo and others before the Committee of the Commons appointed in 1818 to inquire into the Usury Laws.

⁴ The only market rates of discount thus far obtained are those of Overend, Gurney and Co., monthly, from 1824 to 1847. (*Lords' Report* of 1848, p. 467.) It is barely possible that by intensive search among the records of some of the older banking houses, materials may be found throwing light upon these rates for earlier years.

⁵ Charles Fenn, *Compendium of the English and Foreign Funds*, 14th ed., p. 74.

TABLE 10. — UNREDEEMED CAPITALS, ANNUAL CHARGE, AND COMPUTED RATE OF INTEREST ON EXCHEQUER BILLS, 1789-1830

YEAR	Capital values (Units of £1000)	Interest paid (Units of £1000)	Interest rate (Units of 1%)
1789.....	5,600	168	3.0
1790.....	6,829	205	3.0
1791.....	6,958	209	3.0
1792.....	7,455	224	3.0
1793.....	5,796	174	3.0
1794.....	8,406	252	3.0
1795.....	7,411	394	5.3
1796.....	6,572	350	5.3
1797.....	11,688	622	5.3
1798.....	17,608	937	5.3
1799.....	22,043	1,173	5.3
1800.....	19,033	868	4.6
1801.....	14,350	655	4.6
1802.....	17,862	951	5.3
1803.....	24,549	1,307	5.3
1804.....	26,311	1,400	5.3
1805.....	27,141	1,445	5.3
1806.....	31,704	1,688	5.3
1807.....	38,758	1,709	4.4
1808.....	39,067	1,766	4.5
1809.....	37,786	1,604	4.2
1810.....	40,918	1,773	4.3
1811.....	42,528	2,014	4.7
1812.....	44,755	2,148	4.8
1813.....	56,988	2,799	4.9
1814.....	41,442	1,972	4.8
1815.....	44,463	1,929	4.3
1816.....	56,975	1,976	3.5
1817.....	43,765	1,244	2.8
1818.....	37,250	1,049	2.8
1819.....	31,036	944	3.0
1820.....	31,566	960	3.0
1821.....	36,281	1,103	3.0
1822.....	34,742	1,057	3.0
1823.....	32,398	787	2.4
1824.....	27,994	653	2.3
1825.....	24,566	747	3.0
1826.....	27,547	838	3.0
1827.....	27,657	841	3.0
1828.....	25,490	716	2.8
1829.....	25,610	584	2.3
1830.....	25,551	584	2.3

Until the end of the war it is seen that the fluctuations of the yield on consols and the interest on Exchequer bills follow the same general course, the former being usually somewhat higher. After 1815, the rate paid on bills falls considerably below the yield of consols. The yield on the West India Dock stock, so far as these figures go, bears a remarkably close relation to the yield on consols, being approximately 1 per cent above it, *except in the year 1816*. This demonstrates clearly that ordinarily the yield upon consols may be taken as a fairly close indication of variations in the general condition of the market for capital. The divergence of the two curves in 1816 is, however, of considerable importance, the fall of the consols rate being due to the political circumstances attending successful termination

TABLE 11. — (a) ANNUAL AVERAGE OUTSTANDING NOTES OF THE BANK OF ENGLAND, 1792-1830; (b) ANNUAL AVERAGE COMMERCIAL PAPER UNDER DISCOUNT AT THE BANK OF ENGLAND IN LONDON, 1795-1826; (c) DIFFERENCE BETWEEN NOTES AND DISCOUNTS, 1795-1826

(MILLIONS STERLING)

YEAR	Notes	Discounts	Difference *
1792.....	11.4		
1793.....	11.6		
1794.....	10.8		
1795.....	11.5	2.9	8.6
1796.....	10.2	3.5	6.7
1797.....	11.0	5.4	5.6
1798.....	12.6	4.5	8.1
1799.....	13.5	5.4	8.1
1800.....	15.1	6.4	8.7
1801.....	15.8	7.9	7.9
1802.....	16.7	7.5	9.2
1803.....	16.5	10.7	5.8
1804.....	17.4	10.0	7.4
1805.....	16.9	11.4	5.5
1806.....	16.8	12.4	4.4
1807.....	16.7	13.5	3.2
1808.....	17.1	13.0	4.1
1809.....	18.9	15.5	3.4
1810.....	22.5	20.1	2.4
1811.....	23.3	14.4	8.9
1812.....	23.2	14.3	8.9
1813.....	24.0	12.3	11.7
1814.....	26.9	13.3	13.6
1815.....	26.9	14.9	12.0
1816.....	26.6	11.4	15.2
1817.....	28.2	4.0	24.2
1818.....	27.2	4.3	22.9
1819.....	25.1	6.5	18.6
1820.....	23.9	3.9	20.0
1821.....	21.6	2.7	18.9
1822.....	17.9	3.4	14.5
1823.....	18.6	3.1	15.5
1824.....	20.1	2.4	17.7
1825.....	20.1	4.9	15.2
1826.....	22.3	4.9	17.4
1827.....	21.5	†	†
1828.....	21.0		
1829.....	19.6		
1830.....	20.5		

* Difference gives approximately notes issued to purchase Exchequer bills and specie.

† After 1826 the discounts given in the account do not include those at the branch banks which were started in 1827.

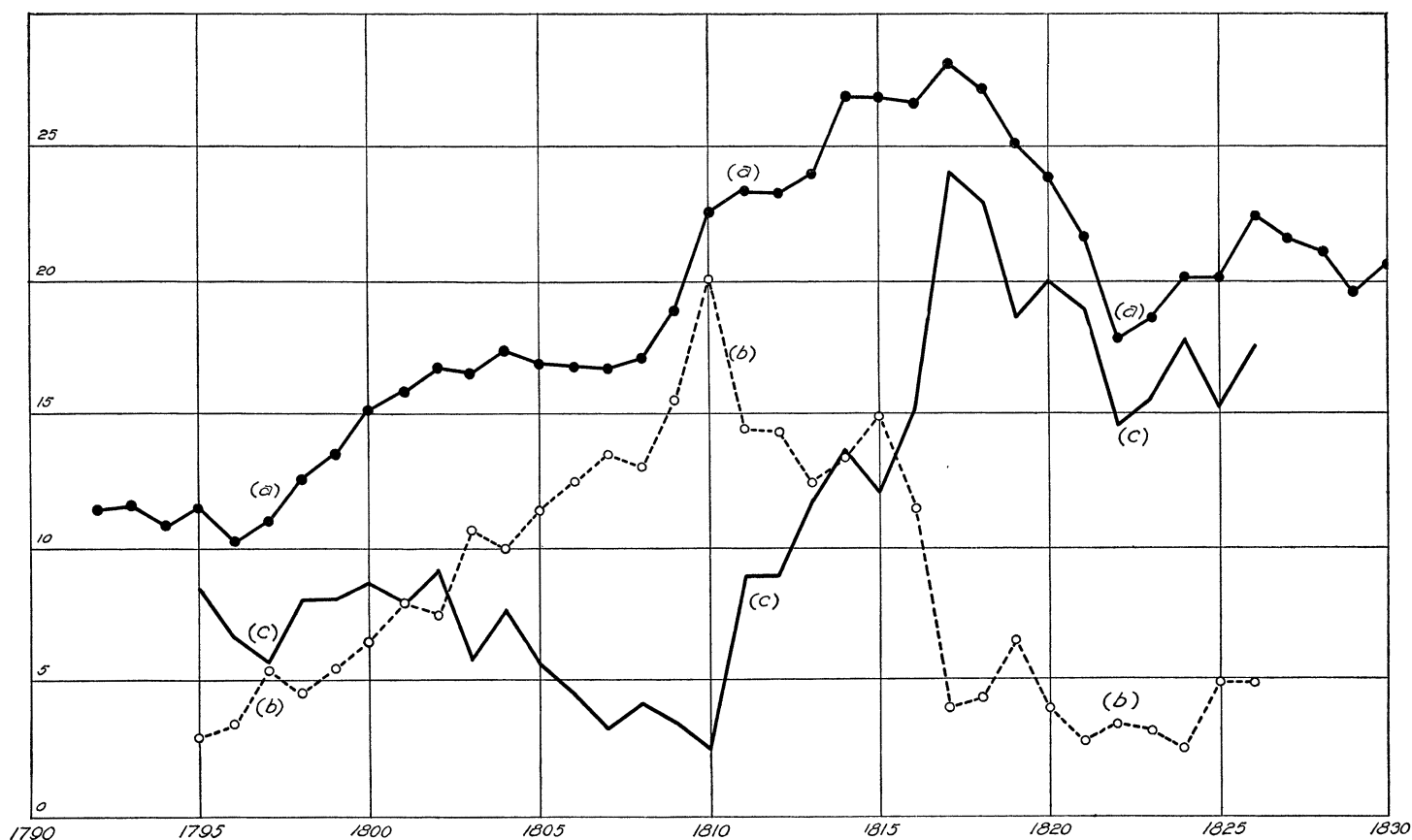
of the long war in the preceding year; while the rise in the yield from the West India dividends bears accurate witness to the severe crisis which occurred in 1816 — concerning which there is abundant corroborative testimony in other quarters.¹ It is quite possible that the fall of the rate on consols in 1802 should be interpreted in the same manner, for a similar reason.

¹ See Tooke, *History of Prices*, vol. 2, chap. 6; and Bouniatian, *Geschichte der Handelskrisen in England*, pp. 226 ff.

CHART 5.—OUTSTANDING CIRCULATION AND DISCOUNT OF COMMERCIAL PAPER, AND DIFFERENCE BETWEEN NOTES AND DISCOUNTS OF THE BANK OF ENGLAND

(DATA GIVEN IN TABLE II)

- (a) ANNUAL AVERAGE OUTSTANDING CIRCULATION OF THE BANK OF ENGLAND, 1792-1830. UNITS OF £1,000,000 STERLING.
 (b) ANNUAL AVERAGE DISCOUNTS OF COMMERCIAL PAPER HELD BY BANK OF ENGLAND, 1795-1826. " " " "
 (c) EXCESS OF NOTES OVER DISCOUNTS, 1795-1826. " " " "



CURRENCY

In passing to statistics of currency, we may begin with the note circulation of the Bank of England. In Appendix 82 to the *Report of the Committee on the Bank Charter of 1832*, there are data of the *average* outstanding bank notes for each quarter year from 1792 to 1831. From these quarterly averages annual averages were derived. In Appendices 56 and 58 of the same *Report*, the quarterly average and also annual average holdings of private commercial paper discounted by the Bank are given; and these annual figures have been placed together with the outstanding circulation in Table II. Appendices 24 and 32 of the *Report* give the average public and private deposits in the Bank beginning with 1807,¹ from which it appears that the private deposits were very moderate and steady, varying between one and two millions at the outside. The great bulk of the private discounts therefore involved note issues. If, then, the difference between the average discounts and the average total circulation be taken, the result will indicate with fair accuracy the notes issued by the Bank for the purchase from the public or the government of Exchequer and Treasury bills (the only forms of public security in which the Bank then invested) and for the purchase of bullion and coin. The results are plotted

¹ Prior to 1807 no distinct accounts were kept at the Bank for public and private deposits.

on Chart 5. Unfortunately, we do not possess official annual data for either of these last mentioned accounts. The nearest approximation to them are figures for but two days in each year, one at the end of February, the other at the end of August — to be found in Appendix 5 of the *Report* for 1832. It would be unsafe to attempt to employ such meagre data for comparison with, and further elaboration of, the above statistics; but since during the restriction the specie holdings of the Bank probably did not fluctuate with very great suddenness, the February-August data for the reserve may be presented for purposes of a rough comparison (Table 12). These figures permit the statement, in a general way, that the Bank made considerable purchases of bullion from 1798 to 1800, 1805 to 1808, and subsequent to 1816, when preparations began for the resumption of cash payments.

Making due allowance for the issue of notes for specie, it appears from the different curves on Chart 5 that the advance *in notes* made by the Bank directly or indirectly to the government were extremely small during the war, and during 1805-10 almost negligible. The magnitude of the credits granted to the government in other forms can be very roughly seen only for the period after 1807 in the data of the annual average public deposits. (See Table 13.) These vary but little from year to year, and decline sharply after 1816. The

TABLE 12. — GOLD RESERVES OF THE BANK OF ENGLAND: (a) BULLION AND COIN HELD BY THE BANK OF ENGLAND ON FEBRUARY 28 AND AUGUST 31, 1790-1830; (b) AVERAGE OF FEBRUARY 28 AND AUGUST 31

Year	Month	Reserve (Units of £1000)	Average Reserve (Units of million £)	Year	Month	Reserve (Units of £1000)	Average Reserve (Units of million £)
1790	{ Feb.	8,633	8.5	1811	{ Feb.	3,351	3.3
	{ Aug.	8,386			{ Aug.	3,243	
1791	{ Feb.	7,869	8.0	1812	{ Feb.	2,983	3.0
	{ Aug.	8,056			{ Aug.	3,099	
1792	{ Feb.	6,468	6.0	1813	{ Feb.	2,884	2.8
	{ Aug.	5,357			{ Aug.	2,712	
1793	{ Feb.	4,011	4.6	1814	{ Feb.	2,204	2.2
	{ Aug.	5,322			{ Aug.	2,098	
1794	{ Feb.	6,987	6.9	1815	{ Feb.	2,037	2.7
	{ Aug.	6,770			{ Aug.	3,409	
1795	{ Feb.	6,128	5.6	1816	{ Feb.	4,641	6.1
	{ Aug.	5,136			{ Aug.	7,563	
1796	{ Feb.	2,540	2.3	1817	{ Feb.	9,681	10.7
	{ Aug.	2,123			{ Aug.	11,668	
1797	{ Feb.	1,086	2.6	1818	{ Feb.	10,055	8.2
	{ Aug.	4,090			{ Aug.	6,363	
1798	{ Feb.	5,829	6.2	1819	{ Feb.	4,185	3.9
	{ Aug.	6,546			{ Aug.	3,595	
1799	{ Feb.	7,564	7.3	1820	{ Feb.	4,911	6.5
	{ Aug.	7,000			{ Aug.	8,211	
1800	{ Feb.	6,144	5.6	1821	{ Feb.	11,870	11.6
	{ Aug.	5,150			{ Aug.	11,234	
1801	{ Feb.	4,640	4.4	1822	{ Feb.	11,057	10.6
	{ Aug.	4,335			{ Aug.	10,098	
1802	{ Feb.	4,153	4.0	1823	{ Feb.	10,384	11.3
	{ Aug.	3,892			{ Aug.	12,658	
1803	{ Feb.	3,777	3.7	1824	{ Feb.	13,810	12.8
	{ Aug.	3,592			{ Aug.	11,787	
1804	{ Feb.	3,372	4.6	1825	{ Feb.	8,779	6.2
	{ Aug.	5,879			{ Aug.	3,634	
1805	{ Feb.	5,884	6.8	1826	{ Feb.	2,460	4.6
	{ Aug.	7,624			{ Aug.	6,754	
1806	{ Feb.	5,987	6.1	1827	{ Feb.	10,159	10.6
	{ Aug.	6,215			{ Aug.	10,464	
1807	{ Feb.	6,143	6.3	1828	{ Feb.	10,347	10.4
	{ Aug.	6,484			{ Aug.	10,499	
1808	{ Feb.	7,855	6.9	1829	{ Feb.	6,835	6.8
	{ Aug.	6,016			{ Aug.	6,796	
1809	{ Feb.	4,489	4.0	1830	{ Feb.	9,171	9.6
	{ Aug.	3,652			{ Aug.	11,150	
1810	{ Feb.	3,501	3.4		{ Feb.		
	{ Aug.	3,192			{ Aug.		

advances in the form of notes made by the Bank to the mercantile community and to other banks are the outstanding feature of its accounts. During the war, the market rate of interest was frequently above, or very little below, the fixed Bank rate of 5 per cent, and the Bank directors pursued a policy of granting as liberal accommodation to commerce as was consistent with their customary limitations respecting the quality of the paper accepted. One consequence of the Bank's fixed discount rate (until 1822) was that, in periods of financial strain, the Bank was called upon to grant an extra measure of accommodation, so that the maximum points upon the curve of its discounts do not, in all cases,

TABLE 13. — ANNUAL AVERAGE PUBLIC DEPOSITS HELD BY THE BANK OF ENGLAND, 1807-1830 *

(UNITS OF £100,000)

Year	Average	Year	Average
1807.....	12.6	1819.....	4.5
1808.....	11.8	1820.....	3.7
1809.....	11.1	1821.....	3.9
1810.....	12.0	1822.....	4.1
1811.....	10.2	1823.....	5.5
1812.....	10.4	1824.....	7.2
1813.....	10.4	1825.....	5.3
1814.....	12.2	1826.....	4.2
1815.....	11.7	1827.....	4.2
1816.....	10.8	1828.....	3.8
1817.....	8.7	1829.....	3.9
1818.....	7.1	1830.....	4.8

* *Commons' Report of 1832, Appendix.*

TABLE 15. — VALUES OF ENGLISH COUNTRY BANK NOTES (OF £1 AND £5) STAMPED IN EACH YEAR: ONE POUND NOTES, 1805-25; FIVE POUND NOTES, 1805-30; ONE AND FIVE POUND NOTES COMBINED, 1805-25

(UNITS OF £1,000,000 STERLING)

Year *	£1 notes	£5 notes	£1 and £5 notes
1805.....	3.75	5.06	8.31
1806.....	2.40	3.23	5.63
1807.....	2.14	2.29	4.43
1808.....	3.08	4.19	7.27
1809.....	4.75	4.19	8.94
1810.....	2.88	3.10	5.98
1811.....	2.88	3.06	5.94
1812.....	3.01	4.21	7.22
1813.....	4.03	3.76	7.79
1814.....	3.40	2.75	6.15
1815.....	2.63	2.35	4.98
1816.....	1.86	2.30	4.16
1817.....	3.28	3.51	6.79
1818.....	3.54	3.73	7.27
1819.....	1.68	13.0	2.98
1820.....	1.66	1.01	2.67
1821.....	2.17	1.22	3.39
1822.....	1.85	1.30	3.15
1823.....	1.90	1.32	3.22
1824.....	2.45	2.17	4.62
1825.....	3.04	2.56	5.60
1826.....	....	.70	
1827.....	....	1.23	
1828.....	....	1.88	
1829.....	....	1.67	
1830.....	....	1.35	

* Year beginning January 6.

coincide with the peaks of the price curve.¹ After 1816 the rate of interest paid by the government on Exchequer bills declined so greatly that the Bank was forced to carry a much larger amount; and the investment by

¹ The Bank's discounts together with other data are compared with prices in Chart 6.

TABLE 14. — (a) AMOUNT OF STAMP DUTY PAID IN EACH YEAR BY COUNTRY BANKS ON PROMISSORY NOTES; (b) ESTIMATED VALUE OF NOTES STAMPED

OFFICIAL YEARS; AND CHANGES OF DUTY	(a)	(b)	(a)	(b)
	Not exceeding £1/1	Value of notes (taken at £1)	Notes over £2/2, not over £5/5	Value of notes (taken at £5)
Duties imposed by 44 Geo. III, ch. 98 (1804)	At 3d. ($\frac{1}{80}$)		At 9d. ($\frac{1}{88}$)	
Year ended January 5, 1806	£40,580	£3,246,000	£37,960	£5,061,000
“ “ “ “ 1807	29,964	2,397,000	24,258	3,234,000
“ “ “ “ 1808	26,774	2,142,000	17,154	2,287,000
January 5, 1808 to October 10, 1808	16,808	1,344,000	20,380	2,717,000
Duties imposed by 48 Geo. III, ch. 149 (1808)	At 4d. ($\frac{1}{80}$)		At 1s. ($\frac{1}{100}$)	
October 10, 1808 to January 5, 1809	£28,978	£1,739,000	£14,742	£1,474,000
Year ended January 5, 1810	79,111	4,747,000	41,935	4,193,000
“ “ “ “ 1811	48,019	2,881,000	30,977	3,098,000
“ “ “ “ 1812	47,941	2,876,000	30,651	3,065,000
“ “ “ “ 1813	50,162	3,010,000	42,144	4,214,000
“ “ “ “ 1814	67,191	4,031,000	37,609	3,761,000
“ “ “ “ 1815	56,694	3,402,000	27,479	2,748,000
January 5, 1815 to October 10, 1815	21,421	1,285,000	11,959	1,196,000
Duties imposed by 55 Geo. III, ch. 184 (1815)	At 5d. ($\frac{1}{80}$)		At 1s. 3d. ($\frac{1}{80}$)	
October 10, 1815 to January 5, 1816	£27,952	£1,342,000	£14,417	£1,153,000
Year ended January 5, 1817	38,701	1,858,000	28,715	2,297,000
“ “ “ “ 1818	68,380	3,282,000	43,844	3,508,000
“ “ “ “ 1819	73,656	3,535,000	46,598	3,728,000
“ “ “ “ 1820	35,099	1,685,000	16,259	1,301,000
“ “ “ “ 1821	34,600	1,661,000	12,636	1,011,000
“ “ “ “ 1822	45,159	2,168,000	15,233	1,219,000
“ “ “ “ 1823	38,616	1,854,000	16,201	1,296,000
“ “ “ “ 1824	39,695	1,905,000	16,449	1,316,000
“ “ “ “ 1825	51,028	2,449,000	27,157	2,172,000
“ “ “ “ 1826	63,310	3,039,000	31,934	2,555,000
“ “ “ “ 1827 .....	....	....	8,725	698,000
“ “ “ “ 1828 .....	....	....	15,369	1,230,000
“ “ “ “ 1829 .....	....	....	23,545	1,884,000
“ “ “ “ 1830 .....	....	....	20,897	1,672,000
“ “ “ “ 1831 .....	....	....	16,882	1,350,000
“ “ “ “ 1832 .....	....	....	18,142	1,451,000

the Bank in public securities was made all the more necessary by the fact that the market rate of discount on commercial paper fell much further below the Bank rate than it had been in the earlier years.¹ From 1821 on the amount of accommodation granted by the Bank to the mercantile community was no greater than at the opening of the war period.

Statistics of the metallic circulation of England for this period do not exist. We know simply that soon after the commencement of the Bank restriction, in 1797, specie began to disappear from circulation, and its place was taken by paper. The loss of the gold coin was earliest and most seriously felt (the silver being in a much more worn and degraded condition), and the Bank consequently was permitted to issue, during the con-

tinuance of the suspension, notes of one and two pounds. In 1798 the country banks likewise were given this privilege, which lasted until 1829. Other important substitutes were (1) the Exchequer bills of the government, which were negotiable and passed not only in payments to the government but to some extent in ordinary transactions; (2) the notes and checks of the country banks; (3) inland bills of exchange. The last were very commonly circulated in commercial dealings, being endorsed from holder to holder until completely covered with signatures. In the West Riding, bills of exchange were long used almost to the exclusion of other forms of large currency. Of the amount of these bills created there are no immediately available statistics for our period, except estimates for

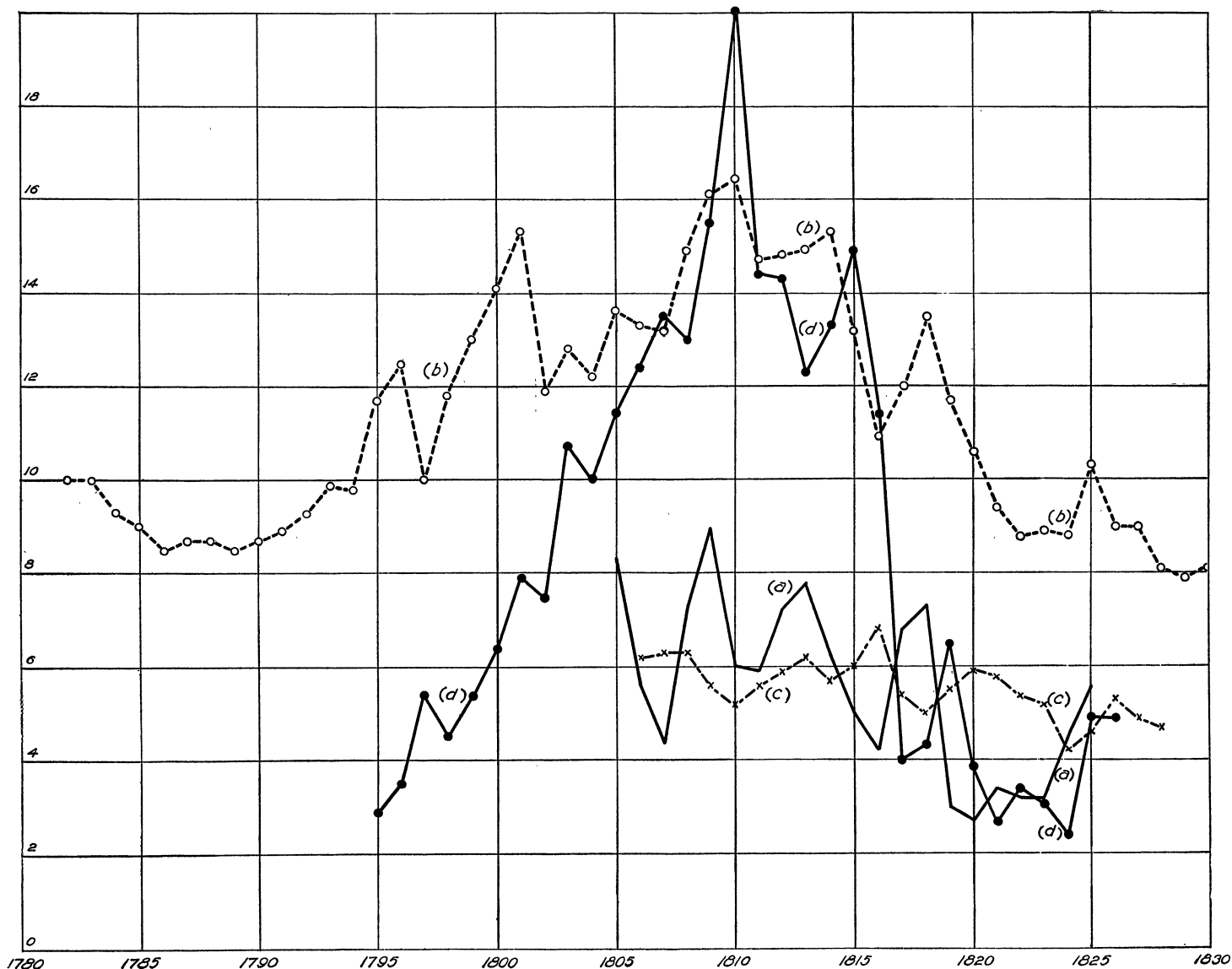
¹ I have not attempted to include data of the note circulation in Scotland or Ireland. It may be mentioned, however, that after the restriction of cash payments had been extended by Parliament to the Bank of Ireland, an extraordinary increase of its notes, as well as of the circulation issued by countless country banks and even trades-

men, took place. A rapid depreciation, observable in the prices of goods and specie and in the Irish exchanges, took place, culminating in 1804. As the result of a Parliamentary inquiry in that year, greater caution was observed by the Irish Bank, and steps were taken to limit the provincial paper.

CHART 6.—SMALL COUNTRY BANK NOTE CIRCULATION, GENERAL PRICES, INTEREST RATES, AND BANK OF ENGLAND DISCOUNTS

(DATA GIVEN IN TABLES 2, 9, 11, 15)

- (a) ESTIMATED CIRCULATION OF SMALL COUNTRY BANK NOTES, 1805-30. UNITS OF £1,000,000.
 (b) JEVONS' INDEX NUMBERS OF PRICES OF FORTY COMMODITIES, 1782-1830. UNITS OF TEN PER CENT.
 (c) AVERAGE YIELD OF WEST INDIA DOCK COMPANY STOCK, 1806-28. UNITS OF ONE PER CENT.
 (d) DISCOUNTS OF BANK OF ENGLAND, 1795-1826. UNITS OF £1,000,000.



1815, 1824, 1825, and 1826-27. Mr. William Leatham, a reliable Wakefield banker, calculated from the returns of bill stamps, which he obtained directly from the Stamp Office, that in those years the total amounts of bills drawn were as follows:¹

	Total bills drawn	Bills outstanding
1815.....	£649,921,163	£162,000,000
1824.....	316,363,783	79,000,000
1825.....	354,405,293	87,000,000
1826-27*.....	282,222,305	71,000,000
1835.....	405,403,051	101,000,000

* Last half of 1826; first half of 1827.

Leatham calculated (for other than the above years) that the average amount of bills outstanding at a given time was one-fourth of the total number created,² and the figures inserted in column 2 are obtained in this manner.

In any statement of the displacement of coin by paper during the restriction, it is most important to make

allowance for the practically unknown quantity of this bill circulation.³

A stamp tax was imposed, not only upon bills of exchange, but also upon bankers' reissuable notes, beginning October 1804. The returns of the Stamp Office of receipts from the stamps on the notes of bankers, from that year until 1831, are to be found in the *Report of 1832*, Appendix 99. The rates of duty on each class of notes were twice increased, in 1808 and in

¹ *Letters to William Raynor Wood*, 2d series, 1841, p. 13. Leatham included estimates for the years 1832-39. See also Newmarch, *Statistical Journal*, (1852), 14, p. 143. The accessible published returns of the Stamp Office were found by the present writer not to give sufficiently complete returns to permit a calculation of the amounts created for other years.

² Assuming the average maturity to be three months.

³ Thus Bouniatian, *op. cit.*, pp. 217, 218, takes an estimate of the gold coin in 1798 as 35 millions sterling (Lord Liverpool) and in 1811 as 3 millions (George Rose) and, adding these respective amounts to the Bank circulation, he obtains a total of 46.3 millions and 26.0 millions, respectively, and draws the conclusion that upon the whole the currency was not enlarged.

TABLE 16. — PUBLIC DEBT OF GREAT BRITAIN AND IRELAND, 1790-1830 *

(UNITS OF £1,000)

YEAR †	FUNDED DEBT		UNFUNDED DEBT		TOTAL DEBT		GENERAL TOTALS
	Great Britain	Ireland	Great Britain	Ireland	Great Britain	Ireland	United Kingdom
1790.....	229,952	1,586	9,509	629	239,461	2,215	241,676
1791.....	227,989	1,625	9,420	629	237,409	2,255	239,663
1792.....	232,065	1,970	12,656	1,183	244,721	3,153	247,874
1793.....	244,936	2,941	14,381	1,064	259,318	4,005	263,323
1794.....	297,392	4,469	18,490	1,111	315,882	5,580	321,463
1795.....	349,947	5,377	7,411	1,164	357,357	6,541	363,899
1796.....	375,160	6,366	6,572	862	381,732	7,228	388,960
1797.....	406,829	8,107	11,688	902	418,517	9,009	427,526
1798.....	413,543	9,824	17,608	1,348	431,151	11,173	442,324
1799.....	435,145	12,002	22,043	1,704	457,189	13,706	470,894
1800.....	485,184	11,860	19,033	1,436	504,216	13,295	517,512
1801.....	508,924	13,307	14,350	1,072	523,274	14,379	537,653
1802.....	515,158	13,103	17,862	1,610	533,020	14,713	547,733
1803.....	531,643	14,160	24,549	779	556,192	14,939	571,131
1804.....	559,625	13,905	26,311	29	585,936	13,934	599,870
1805.....	577,841	16,114	27,141	....	604,982	16,114	621,097
1806.....	585,960	15,773	31,704	370	617,663	16,143	633,806
1807.....	586,833	17,454	38,758	501	625,591	17,955	643,546
1808.....	596,414	18,375	39,067	606	635,480	18,981	654,461
1809.....	606,416	17,886	37,786	106	644,202	17,991	662,194
1810.....	615,518	20,065	40,918	1,699	656,436	21,764	678,200
1811.....	640,348	21,062	42,528	2,316	682,876	23,378	706,254
1812.....	717,510	22,514	45,554	2,516	763,064	25,030	788,094
1813.....	727,767	25,092	57,780	2,501	785,547	27,593	813,140
1814.....	792,033	24,278	42,229	2,498	834,263	26,776	861,039
1815.....	772,765	23,435	44,463	5,305	817,228	28,740	845,968
1816.....	755,738	21,004	56,975	5,665	812,713	26,669	839,382
1817.....	768,802	23,065	43,765	4,950	812,568	28,015	840,583
1818.....	770,158	24,822	37,250	4,300	807,409	29,122	836,531
1819.....	777,308	24,258	31,036	2,300	808,343	26,558	834,901
1820.....	771,062	24,251	31,566	1,105	802,628	25,356	827,984
1821.....	770,741	25,789	38,677	....	809,418	25,789	835,207
1822.....	765,361	26,341	35,778	....	801,140	26,341	827,480
1823.....	753,168	27,955	37,900	....	791,068	27,955	819,024
1824.....	747,072	31,056	31,703	....	778,775	31,056	809,831
1825.....	752,110	31,692	25,025	....	777,135	31,692	808,826
1826.....	746,686	30,790	27,622	....	774,308	30,790	805,099
1827.....	741,090	31,233	27,710	....	768,800	31,233	800,032
1828.....	739,626	31,626	25,548	....	765,173	31,626	796,800
1829.....	725,356	32,131	27,317	....	752,672	32,131	784,804
1830.....	722,616	32,927	27,173	....	749,789	32,927	782,717

* From *Parliamentary Accounts and Papers*, 1857, 1858, 33.

† Year beginning January 6.

1815, at which times the circulation outstanding could not be reissued, but was replaced by new notes bearing the higher stamps.¹ If a calculation were made of the notes stamped, the results would be affected by the larger demand for stamps directly after a change in the scale of duties. This circumstance, however, is probably of no great consequence for the notes of the smaller denominations — particularly those of one pound — since these circulated so rapidly and became so worn in the space of a year that a considerable proportion of

them would in any case be replaced by new notes within a year's time. If then a calculation is made for the smaller notes, the results will be of value in indicating at least the scale of fluctuations in the notes circulated by the provincial bankers outside the London area. Such a calculation has been made of the notes falling in two of the several classifications, namely, (1) notes not exceeding £1, 1s., which are assumed to be mainly one pound notes, and (2) notes falling between £2, 2s. and £5, 5s., which are taken as five-pound notes, on the

¹ It is not wholly clear whether the notes were actually called in or simply not again reissued; but in the former case the process would

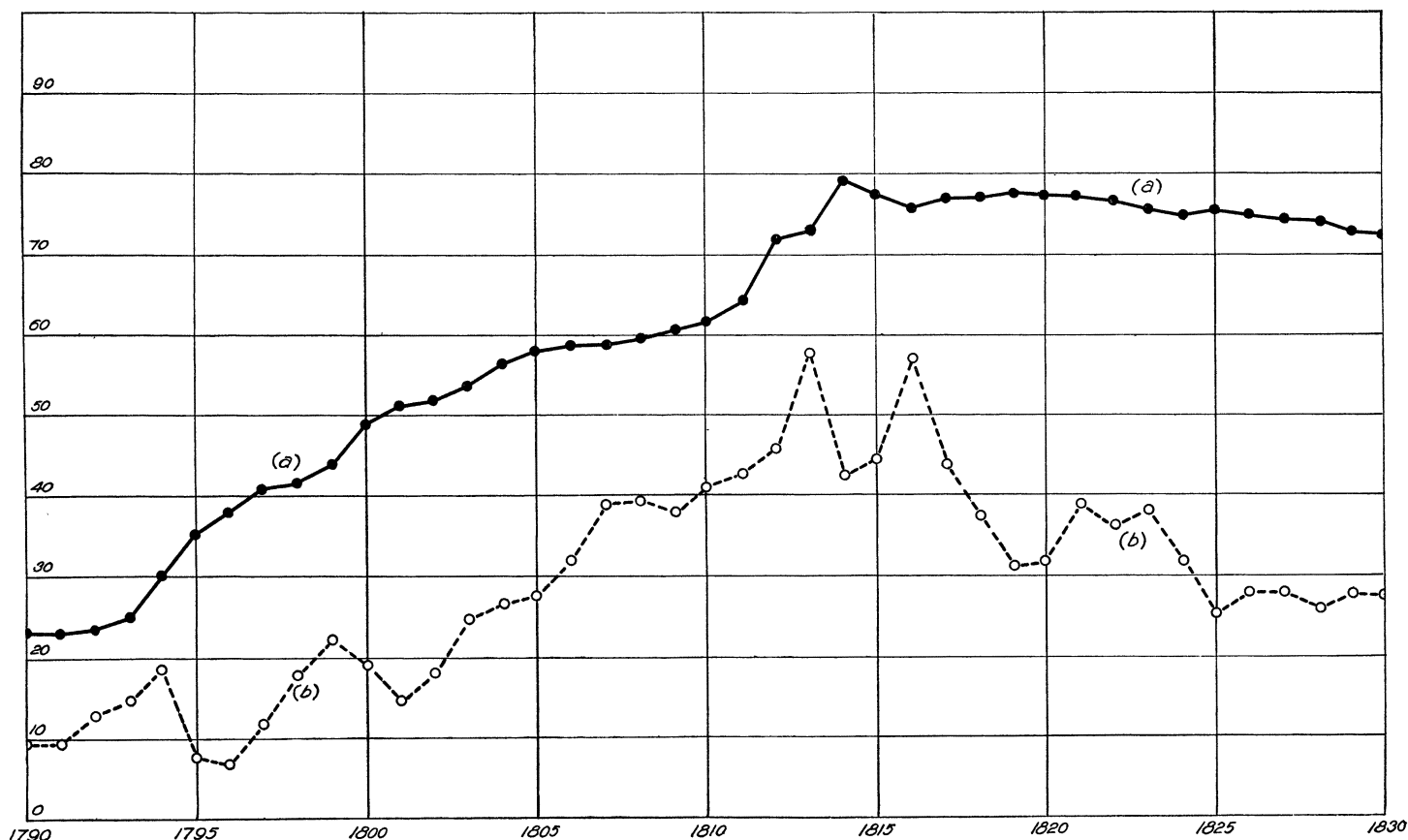
not have been sufficiently immediate to affect the assumptions made in the course of the analysis.

CHART 7.—FUNDED AND UNFUNDED DEBT OF GREAT BRITAIN, 1790-1830

(DATA GIVEN IN TABLE 16)

(a) FUNDED DEBT. UNITS OF £10,000,000.

(b) UNFUNDED DEBT. UNITS OF £1,000,000.



average. The results obtained by dividing the stamp receipts by the rates of duty are given in Tables 14 and 15. The data are plotted on Chart 6, together with Jevons' index numbers of general prices, the rate of interest derived from the yield of West India Dock dividends, and the Bank of England discounts. The correspondence between the curves is extremely close. A lag is to be observed between the country issues and prices, which is probably due in part to the failure of Jevons' index numbers to include the entire year. The country banks, relieved like the Bank of England from meeting their obligations in specie, appear to have taken an active part in bringing about those successive speculative oscillations in prices which are the striking feature of the war period. When the money market was in an easy condition speculative operations were set on foot, the banks increased their discounts, many of them re-discounting directly or indirectly at the Bank of England, and in return receiving Bank notes capable of sustaining further local advances.

PUBLIC DEBT

Mention has already been made of the purchase by the Bank of England of government securities in the form of Exchequer bills; in conclusion a presentation of the total magnitude both of these and of the funded debt is desirable. Figures for the unfunded debt (consisting primarily of Exchequer bills during the war) and for the funded debt are contained in the *Parliamentary Accounts and Papers* of 1857-58, volume 33. These data are for official years, ending January 5th, and are presented in Table 16 for the corresponding calendar years. The figures are plotted on Chart 7. The funded debt reached its maximum in 1814, and the unfunded debt in 1813 and 1816. The use of government securities as collateral for private loans at the local banks is a topic upon which further research is needed to furnish sufficient information; but presumably the practice occurred upon a considerable scale and in this manner the borrowing operations of the government contributed indirectly to augment the volume of the currency.

(For Taylor's index numbers of prices and bibliography see Appendix, pp. 321-323.)